

**IN THE CLAIMS:**

Please amend the claims where indicated below:

1. (Currently Amended) A vertical cavity surface emitting laser (VCSEL), comprising:

at least one quantum well having a depth of at least 40 meV, wherein said depth is defined ~~as~~using the difference between a valence band offset and a conduction band offset and wherein said at least one quantum well comprises of material that is free of indium and is comprised of GaAsSb;

barrier layers sandwiching said at least one quantum well; and

confinement layers sandwiching said barrier layers.

2. (Previously Presented) The VCSEL of claim 1 wherein said barrier layers are comprised of GaAs and at least one of Al, N and P.

3. (Previously Presented) The VCSEL of claim 1 wherein said confinement layers are comprised of GaAs and at least one of Al, N and P.

4. (Original) The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

5. (Original) The VCSEL of claim 1 wherein said barrier layers are comprised of AlGaAs.

6. (Previously Presented) The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

7. (Previously Presented) The VCSEL of claim 1 wherein said at least one quantum well further comprises greater than 1% N.

8. **(Previously Presented)** The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

9. **(Previously Presented)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

10. **(Previously Presented)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

11. **(Previously Presented)** The VCSEL of claim 6 wherein said confinement layers are comprised of GaAsN.

12. **(Previously Presented)** The VCSEL of claim 6 wherein said barrier layers are comprised of GaAsN and said confinement layers are GaAsP.

13. **(Previously Presented)** The VCSEL of claim 4 wherein said at least one quantum well comprises >1% N.

14. **(Original)** The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

15. **(Original)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

16. **(Previously Presented)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

17. **(Previously Cancelled)**

18. **(Previously Cancelled)**

19. **(Original)** The VCSEL of claim 1 wherein said quantum well is up to and including 50Å in thickness.

20. **(Previously Presented)** The VCSEL of claim 19 wherein said barrier layers are comprised of GaAs and at least one of Al, N and P.

21. **(Previously Presented)** The VCSEL of claim 19 wherein said confinement layers are comprised of GaAs and at least one of Al, N and P.

22. **(Previously Presented)** The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsP.

23. **(Previously Presented)** The VCSEL of claim 19 wherein said barrier layers are comprised of AlGaAs and said confinement layers are comprised of GaAsP.

24. **(Original)** The VCSEL of claim 19 wherein said barrier layers are comprised of AlGaAs.

25. **(Original)** The VCSEL of claim 19 wherein said at least one quantum well comprises N.

26. **(Original)** The VCSEL of claim 25 wherein said barrier layers are comprised of GaAsP.

27. **(Original)** The VCSEL of claim 25 wherein said confinement layers are comprised of AlGaAs.

28. **(Previously Presented)** The VCSEL of claim 26 wherein said confinement layers are comprised of AlGaAs.

29. (Original) The VCSEL of claim 27 wherein said barrier layers are comprised of AlGaAs.

30. (Original) The VCSEL of claim 25 wherein said barrier layers are comprised of AlGaAs.

31. (Previously Presented) The VCSEL of claim 19 wherein said at least one quantum well comprises  $>1\%$  N.

32. (Original) The VCSEL of claim 31 wherein said barrier layers are comprised of GaAsP.

33. (Original) The VCSEL of claim 31 wherein said confinement layers are comprised of AlGaAs.

34. (Original) The VCSEL of claim 32 wherein said confinement layers are comprised of AlGaAs.

35. (Original) The VCSEL of claim 33 wherein said barrier layers are comprised of AlGaAs.

36. (Original) The VCSEL of claim 31 wherein said barrier layers are comprised of AlGaAs.

37. (Currently Amended) A vertical cavity surface emitting laser (VCSEL), comprising:

at least one indium free quantum well comprised of GaAsSb, wherein the depth of said quantum well is defined as using the difference between a valence band offset and a conduction band offset;

GaAs barrier layers sandwiching said at least one quantum well; and

GaAs confinement layers sandwiching said barrier layers.

38. **(Previously Presented)** The VCSEL of claim 37 wherein said barrier layers are comprised of GaAs and at least one of Sb, N, Al, P.
39. **(Previously Presented)** The VCSEL of claim 37 wherein said confinement layers are comprised of GaAs and at least one of Sb, N, Al, P.
40. **(Previously Presented)** The VCSEL of claim 37 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.
41. **(Previously Presented)** The VCSEL of claim 37 wherein said barrier layers are comprised of AlGaAs and said confinement layers are comprised of GaAsP.
42. **(Previously Presented)** The VCSEL of claim 37 wherein said barrier layers are comprised of AlGaAs.
43. **(Previously Presented)** The VCSEL of claim 37 wherein said at least one quantum well further comprises  $>1\%$  N.
44. **(Previously Presented)** The VCSEL of claim 37 wherein said barrier layers are comprised of GaAsP.
45. **(Previously Presented)** The VCSEL of claim 37 wherein said confinement layers are comprised of AlGaAs.
46. **(Previously Presented)** The VCSEL of claim 37 wherein said confinement layers are comprised of AlGaAs.
47. **(Previously Presented)** The VCSEL of claim 37 wherein said quantum well is up to and including 50 Å in thickness.

48. (Currently Amended) A vertical cavity surface emitting laser (VCSEL), comprising:

at least one quantum well consisting essentially of GaAsSb, wherein the depth of said quantum well is defined ~~as~~using the difference between a valence band offset and a conduction band offset;

GaAs barrier layers sandwiching said at least one quantum well; and

AlGaAs confinement layers sandwiching said barrier layers.

49. (Previously Presented) The VCSEL of claim 48 wherein said barrier layers are further comprised of GaAsP.

50. (Previously Presented) The VCSEL of claim 48 wherein said barrier layers are further comprised of GaAsN.

51. (Previously Presented) The VCSEL of claim 48 wherein said at least one quantum well further comprises >1% N.

52. (Original) The VCSEL of claim 51 wherein said barrier layers are comprised of GaAsP.

53. (Original) The VCSEL of claim 51 wherein said barrier layers are comprised of AlGaAs.

54. (Original) The VCSEL of claim 48 wherein said quantum well is up to and including 50 Å in thickness.

55. (Original) The VCSEL of claim 54 wherein said barrier layers are comprised of GaAsP.

56. (Original) The VCSEL of claim 54 wherein said barrier layers are comprised of AlGaAs.

57. **(Previously Presented)** The VCSEL of claim 54 wherein said at least one quantum well further comprises  $>1\%$  N.

Claims 58-59 **(Cancelled)**.